

73rd MORSS CD Cover Page

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During Operation Iraqi Freedom

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During Operation Iraqi Freedom

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Report Documentation Page

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Selected Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom

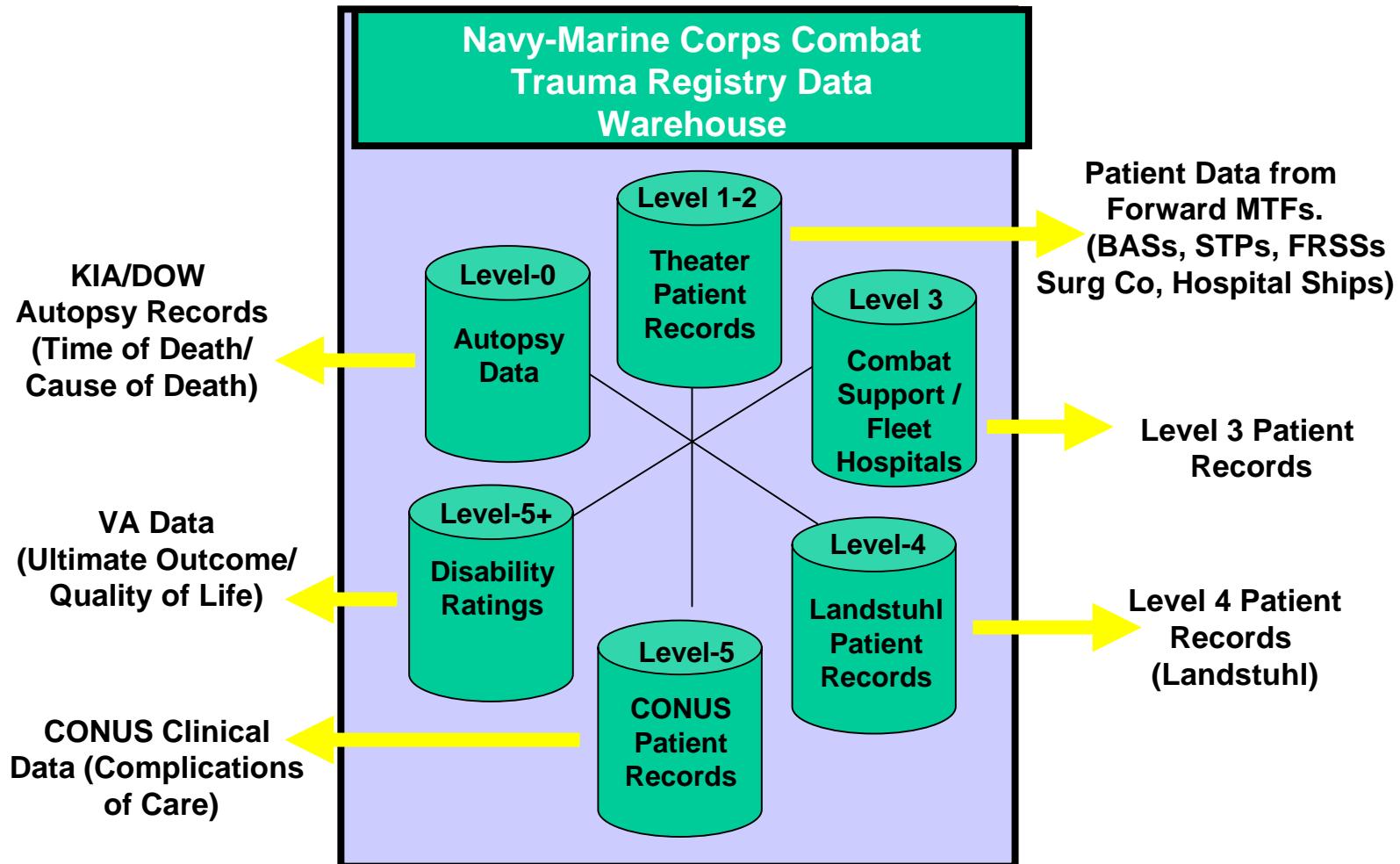
Jay Walker – Mike Galarneau
Naval Health Research Center

Navy-Marine Corps COMBAT TRAUMA REGISTRY
Naval Health Research Center San Diego, CA



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Navy – Marine Corps Combat Trauma Registry



Completed CTR Data Collection Form

12,000+ Completed Forms Currently Received by the Naval Health Research Center

195

Theater Medical Registry Record					
MTF Designation: 351P	Location: 70	Casualty Name: 		Casualty SSN: 	
Time of Injury: 2100 DTG 07 JUN 04		Rank: LCpl	Date of Birth: 24 SEP 83	Gender: <input checked="" type="checkbox"/> Male <input type="checkbox"/> Female	Unit: HQ
Time of Arrival: 2200 DTG 07 JUN 04		Nationality: <input checked="" type="checkbox"/> US <input type="checkbox"/> Host Nation <input type="checkbox"/> Enemy () <input type="checkbox"/> Coalition ()		Category: <input type="checkbox"/> Civilian <input type="checkbox"/> Combatant <input type="checkbox"/> Contractor	
Arrival Method: <input type="checkbox"/> Non-MED GND <input type="checkbox"/> Non-MED GND <input type="checkbox"/> Walked <input type="checkbox"/> Ship EVAC <input type="checkbox"/> Ship EVAC <input type="checkbox"/> Carried <input type="checkbox"/> GND AMB <input type="checkbox"/> GND AMB <input checked="" type="checkbox"/> USMC CASEVAC <input type="checkbox"/> DUSTOFF <input type="checkbox"/> DUSTOFF <input type="checkbox"/> Transit Duration Time: 				<input type="checkbox"/> USA <input type="checkbox"/> SOF <input type="checkbox"/> USN <input type="checkbox"/> NGO () <input checked="" type="checkbox"/> USMC <input type="checkbox"/> Other <input type="checkbox"/> USAF	
Wounded By: <input checked="" type="checkbox"/> Enemy <input type="checkbox"/> UNK <input type="checkbox"/> Friendly <input type="checkbox"/> Civilian (Host Country) <input type="checkbox"/> Training <input type="checkbox"/> Self Accident <input type="checkbox"/> Self Non-Accident <input type="checkbox"/> Sports Recreation <input type="checkbox"/> Other: 		Protection: <input type="checkbox"/> UNK		Not worn <input type="checkbox"/> Worn <input type="checkbox"/> Struck <input type="checkbox"/> Penetrated	Triage category: <input checked="" type="checkbox"/> Immediate <input type="checkbox"/> Delayed <input type="checkbox"/> Minimal <input type="checkbox"/> Expectant
Mechanism of Injury: <input type="checkbox"/> Motor Vehicle Crash <input type="checkbox"/> Burn 1° 2° 3° %TBSA <input type="checkbox"/> GSW/Bullet <input type="checkbox"/> Crush <input type="checkbox"/> Blunt Trauma <input type="checkbox"/> Fall <input type="checkbox"/> Single Fragment <input type="checkbox"/> CBRNE <input checked="" type="checkbox"/> JED <input type="checkbox"/> Multi Fragment <input type="checkbox"/> Blast <input type="checkbox"/> Other					Glasgow Coma Scale: 3 8 12 15 UNC STUPOR LETHARGY ALERT (please write number)
INJURY Description (Location, nature and size in cm. Be specific.)					
OR Start Stop: 	DTG: 	Vent On Off: 	DTG: 	ICU In Out: 	DTG:
Provider: GARNER DAREN		Specialty: Emergency Med		Date: 07/07/04	
Medical Visit: <input type="checkbox"/> Sick Call <input type="checkbox"/> Trauma			Treatment: <input type="checkbox"/> Initial <input type="checkbox"/> Follow-Up		
MEDCOM Test Form 1381, JAN 2004/NHRC Revised 2-04					

Theater Medical Registry Record – Demographic Information

Bravo Surgical Co.,
FRSS3/STP7,
2/2 BAS, etc.

AI Asad, Korean
Village, Blue Diamond,

Facility Type: Base-X
 GP CBPS Hard Bldg

Doe, John B.

123 45 6789

Theater Medical Registry Record				
MTF Designation: [REDACTED]	Location: [REDACTED]	Facility Type: <input type="checkbox"/> Base-X <input type="checkbox"/> GP <input type="checkbox"/> CBPS <input type="checkbox"/> Hard Bldg	Casualty Name (Last, First MI): [REDACTED]	Casualty SSN: [REDACTED] - [REDACTED] - [REDACTED]
MTF Casualty Received From: [REDACTED]	Rank: [REDACTED]		Date of Birth: [REDACTED]	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female
Date/Time of Injury: [REDACTED] DDMMYY/TIME	Date/Time Arrived: [REDACTED] DDMMYY/TIME		Prefer Military Rank vice Paygrade: 1 st LT, Tech Sgt, Airman, PO4, etc.	Unit: [REDACTED]

Field, 2D LAR BAS,
FRSS2/STP4, etc.

11NOV04/1520,
27 APR 04/1945

22 JUN 1988 Male Female
3/10, 2D Recon Bn,
MWSS-273, etc.

Theater Medical Registry Record – Protective Gear

Protection:	Not Worn	Worn	Struck	Penetrated
<input type="checkbox"/> UNK				
Helmet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eye Wear: Wiley-X <input type="checkbox"/> / ESS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flak Vest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramic Plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Axillary/Deltoid protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower extremity protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____ (Face, Ears, etc...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Identify any additional protective equipment worn by patient in this section.

Theater Medical Registry Record – Vitals / Treatments

Vitals:			
Time	_____	_____	_____
Pulse	_____	_____	_____
Temp	_____	_____	_____
B/P	/	/	/
Resp	_____	_____	_____
SpO2	_____ %	_____ %	_____ %
Tx & Procedures:			
Sedated	_____		
Chem Paralyzed	_____		
Intubated	_____		
CRIC	_____		
Needle Decompr.	_____		
Chest Tube	<input type="checkbox"/> L side <input type="checkbox"/> R side <input type="checkbox"/> Blood <input type="checkbox"/> Air		
I/O Line	_____		
Colloid (HTS/Albumin)	_____ ml		

Since only 3 lines
available, list any
elsewhere in notes

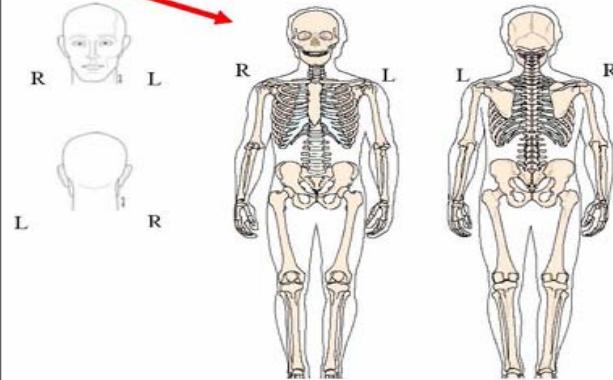


initial,

Crystalloid (LR/NS) Other: _____	_____ ml
Tourniquet	Time on _____ Time off _____
Collar/C-Spine	_____
Hemostat (e.g. Quick Clot)	_____
Oxygen	_____ Liters/min.
RBC	_____ units
FFP	_____ units
CRYO	_____ units
Plts	_____ Packs
HBOC	_____ ml
Walking Blood Bank	_____ units
EXT Fixation (location)	_____
Long Bone Splint	_____

Theater Medical Registry Record – Injury Description, OR/Vent/ICU

Illustrate injuries by drawing.

INJURY Description (Location, nature and size in cm.) Be specific – Enter free text type in gray box, 500 character maximum														
<p>Use standard medical abbreviations and terms</p>  <p>Date and Start/Stop times</p> <table border="1"><tr><td>OR Start Stop</td><td>DDMMYY/TIME DDMMYY/TIME</td><td>Vent On Off</td><td>DDMMYY/TIME DDMMYY/TIME</td><td>CU In Out</td><td>DDMMYY/TIME DDMMYY/TIME</td></tr><tr><td>Provider:</td><td colspan="2">Specialty:</td><td colspan="3">Date: DDMMYY/TIME</td></tr></table> <p>Medical Visit: <input type="checkbox"/> Sick Call <input type="checkbox"/> Trauma Treatment: <input type="checkbox"/> Initial <input type="checkbox"/> Follow-Up</p>			OR Start Stop	DDMMYY/TIME DDMMYY/TIME	Vent On Off	DDMMYY/TIME DDMMYY/TIME	CU In Out	DDMMYY/TIME DDMMYY/TIME	Provider:	Specialty:		Date: DDMMYY/TIME		
OR Start Stop	DDMMYY/TIME DDMMYY/TIME	Vent On Off	DDMMYY/TIME DDMMYY/TIME	CU In Out	DDMMYY/TIME DDMMYY/TIME									
Provider:	Specialty:		Date: DDMMYY/TIME											

Specify Sick Call or Trauma

Specify Initial or Follow-up

Theater Medical Registry Record – Discharge Summary Information

Region	<input type="checkbox"/> Discharge Summary Information (Diagnosis, Procedures and Complications)
Head & Neck (incl. C-Spine)	<input type="checkbox"/>
Chest (incl. T-Spine)	<input type="checkbox"/>
Abdomen (incl. L-Spine)	<input type="checkbox"/>
Upper Extremities	<input type="checkbox"/>
Pelvis	<input type="checkbox"/>
Lower Extremities	<input type="checkbox"/>
Skin	<input type="checkbox"/>

Damage Control Procedures: Emergent, non-definitive surgical procedure generally performed at an FRSS or Surgical Company



Short explanation of diagnosis, procedures performed, and/or complications.

Each field has 350 character limit in Word document format

Damage Control Procedure? Y N Hypothermic? Y N Coagulopathy? Y N Class of Hemorrhage: I II III IV Shock? Y N

Wounded in Action (WIA)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

Length of Stay	Return to Duty	Air Evac	Ground Evac	Morgue *	Total	%
1 Hour or Less	1	6	-	-	7	3.5%
1 to 6 Hours	2	59	4	2	67	33.8%
6 to 12 Hours	-	40	-	1	41	20.7%
12 to 24 Hours	3	68	-	1	72	36.4%
24 to 48 Hours	-	8	-	1	9	4.5%
Unknown Duration	2	-	-	-	2	1.0%
Total	8	181	4	5	198	100%

Non-Battle Injury Patients (NBI)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	34	6	5	45	20.3%
1 to 6 Hours	35	34	1	70	31.5%
6 to 12 Hours	-	35	-	35	15.8%
12 to 24 Hours	4	43	-	47	21.2%
24 to 48 Hours	5	14	-	19	8.6%
48 to 72 Hours	1	1	-	2	0.9%
72 to 96 Hours	2	-	-	2	0.9%
Unknown Duration	2	-	-	2	0.9%
Total	83	133	6	222	100%

Disease Patients (DIS)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

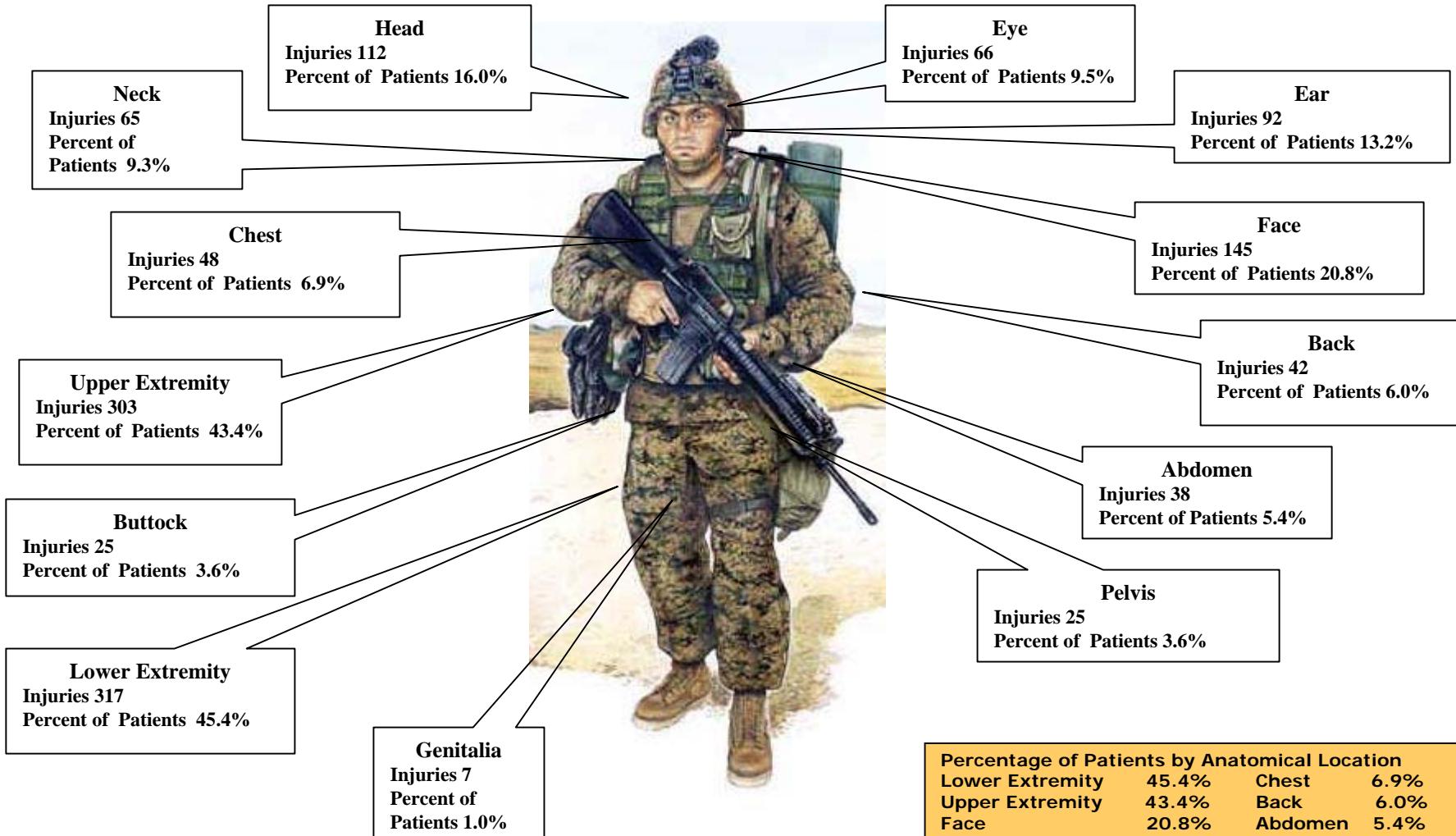
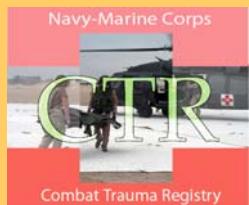
Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	53	2	-	55	24.7
1 to 6 Hours	61	16	1	78	35.0%
6 to 12 Hours	5	11	-	16	7.2%
12 to 24 Hours	24	24	1	48	21.5%
24 to 48 Hours	13	8	-	21	9.4%
48 to 72 Hours	2	2	-	4	1.8%
72 to 96 Hours	1	-	-	1	0.4%
Total	159	63	1	223	100%

**US Navy, Marine Corps and Army
Primary Mechanism for Wounded in Action (WIA) Personnel
Sample of April 2004 – May 2005**

Primary Mechanism of Injury	WIA	Percent
IED	457	37.5 %
Fragments (Unspecified)	189	15.5%
Gunshot Wounds (GSW)	183	15.0%
Blast	106	8.7 %
Mortar	102	8.4 %
RPG	48	3.9 %
Mine	17	1.4 %
Motor Vehicle	14	1.1 %
Blunt Trauma	13	1.1 %
Grenade	12	1.0%
Fall	10	0.8%
Burns	9	0.7%
Aircraft Accident	5	0.4%
Other/Not Stated	53	4.3%
Total	1218	100.0 %

Service	WIA	%
Marines	933	76.6%
Army	183	15.0%
Navy	48	3.9%
Air Force	1	0.1%
Not Recorded	53	4.4%
Total	1218	100.0%

Anatomical Location of Injury

US Navy, Marine Corps and
Army - WIA only
Sample of April 2004-May 2005

Percentage of Patients by Anatomical Location	
Lower Extremity	45.4%
Upper Extremity	43.4%
Face	20.8%
Head	16.0%
Ear	13.2%
Eye	9.5%
Neck	9.3%
Chest	6.9%
Back	6.0%
Abdomen	5.4%
Buttock	3.6%
Pelvis	3.6%
Genitalia	1.0%

*Number of clinically assessed patients

**US Navy, Marines and Army
Wounded in Action**
**Primary Mechanism of Injury by
Anatomical Location**
Sample of April 2004– May 2005

*Percentages below will not add up to 100% due to injuries to multiple anatomical locations.

Primary Mechanism of Injury	Clinical Assess.
IED	278
Fragments (Unspec.)	105
Gunshot Wounds	111
Blast	38
Mortar	73
RPG	37
Mine	8
Motor Vehicle	10
Blunt Trauma	0
Grenade	7
Fall	9
Burns	4
Aircraft Accident	4
Other/Not Stated	14
Totals	698

IED - 278 Patients, 601 Locations (2.16 Locations/Patient)

Head	60	21.6%	of IED Patients
Face	88	31.7%	Chest
Eye	46	16.5%	Upper
Ear	65	23.4%	Lower
			15 5.4% 135 48.6% 111 39.9%
			Back 17 6.1% Pelvis 6 2.2% Neck 31 11.2% Buttock 11 4.0% Genitalia 2 0.7% Abdomen 14 5.0%

Fragments - 105 Patients, 159 Locations (1.51 Locations/Patient)

Head	7	6.7%	of Fragment Patients
Face	11	10.5%	Chest
Eye	3	2.9%	Upper
Ear	3	2.9%	Lower
			7 6.7% 52 49.5% 48 45.7%
			Back 5 4.8% Pelvis 5 4.8% Neck 11 10.5%
			Buttock 3 2.9% Genitalia 0 0.0% Abdomen 4 3.8%

GSW 111 Patients 151 Locations (1.36 Locations/Patient)

Head	5	4.5%	of Gunshot Wound Patients
Face	13	11.7%	Chest
Eye	2	1.8%	Upper
Ear	3	2.7%	Lower
			9 8.1% 35 31.5% 52 46.8%
			Back 8 7.2% Pelvis 5 4.5% Neck 4 3.6%
			Buttock 5 4.5% Genitalia 1 0.9% Abdomen 9 8.1%

Mortar 73 Patients 135 Locations (1.85 Locations/Patient)

Head	20	27.4%	of Mortar Patients
Face	8	11.0%	Chest
Eye	2	2.7%	Upper
Ear	5	6.8%	Lower
			9 12.3% 25 34.2% 43 58.9%
			Back 5 6.8% Pelvis 3 4.1% Neck 7 9.6%
			Buttock 3 4.1% Genitalia 1 1.4% Abdomen 4 5.5%

RPG 37 Patients 78 Locations (2.11 Locations/Patient)

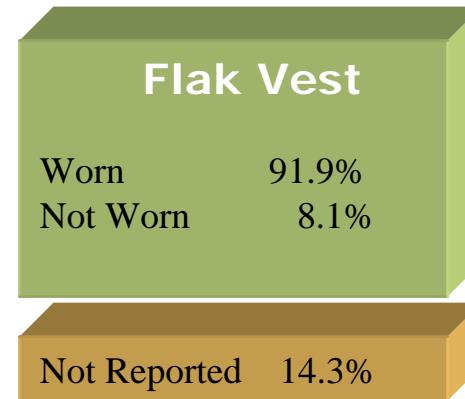
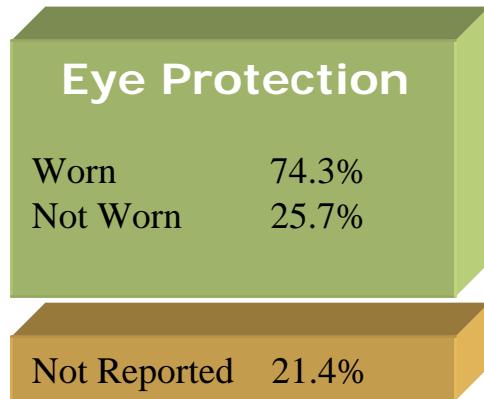
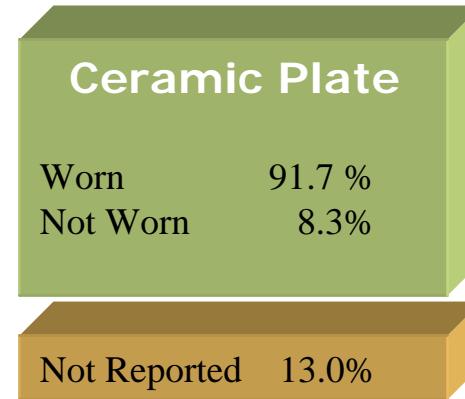
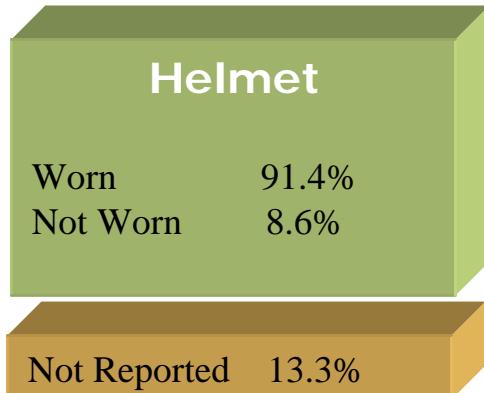
Head	3	8.1%	of RPG Patients
Face	8	21.6%	Chest
Eye	2	5.4%	Upper
Ear	5	13.5%	Lower
			1 2.7% 24 64.9% 20 54.1%
			Back 1 2.7% Pelvis 5 13.5% Neck 4 10.8%
			Buttock 2 5.4% Genitalia 1 2.7% Abdomen 2 5.4%

Protective Gear Status Captured by the Combat Trauma Registry

	Worn	Not Worn
Hit and killed	X	X
Hit and wounded	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hit and not wounded (protected)	X	
Not Hit	X	X

US Navy, Marine Corps and Army WIA Casualties Wearing Protective Equipment at Time of Injury

Sample of April 2004- May 2005



Patients = 1218

Primary Mechanism of Injury by Use of Protective Gear (Helmets, Flak Vests, Ceramic Plates) for US WIA

Mechanism of Injury	Not Wearing	Wearing
Mortar/Rocket	30.1%	4.9%
Blast (unspec)	25.2%	7.5%
Fragment	17.5%	15.5%
IED	7.8%	41.9%
RPG	4.9%	4.1%
Fall	2.9%	0.7%
Gunshot Wound	1.9%	16.3%
Other	9.7%	9.1%
Total	100.0%	100.0%
n-size	103	937

Surgical Procedures by Casualty Type
Sample of WIA and NBI Patients April 2004 – May 2005

Wounded in Action (WIA) Surgical Patients n=334		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	236	70.7%
Exploratory Laparotomy	49	14.7%
Tissue Exploration	48	14.4%
External Fixation	37	11.1 %
Orthopedic Exploration	32	9.6 %
Chest Tube	26	7.8%
Fasciotomy	22	6.6 %
Vascular Ligation	22	6.6 %
Fracture Reduction	15	4.5 %
Amputation	13	3.9 %
Vascular Shunt	12	3.6 %
Colon Resection	11	3.3 %
Thoracotomy	8	2.4 %
Surgical Airway	3	0.9%
Other	5	1.5%
Total Procedures	539	

Non-Battle Injury (NBI) Surgical Patients n=29		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	17	58.6 %
Fracture Reduction	11	37.9%
Tissue Exploration	4	13.8%
Orthopedic Exploration	3	10.3%
External Fixation	1	3.4%
Amputation	1	3.4%
Chest Tube	1	3.4%
Exploratory Laparotomy	1	3.4 %
Vascular Repair	1	3.4 %
Total Procedures	40	

***Percentages will not add up to 100% due to multiple surgical procedures per patient.**

Theater Data Collection Resources

Iraq CTR Registrars

In contact with all theater MTFs & providers.

Copies X-rays from theater digital radiography units.

Troubleshoots data collection issues & provide training.

Iraq CTR Help-Desk

ctr@nhrc.navy.mil

Provides immediate contact between providers, Iraq registrars
and the Naval Health Research Center

Web-Based Navy-Marine Corps CTR Form

<https://fieldmedical.mtstech.com/jsf-ctrform/ctr.jsp>



Navy-Marine Corps COMBAT TRAUMA REGISTRY
Naval Health Research Center San Diego, CA

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Marine Corps Systems Command &
Marine Corps Warfighting Lab

Secondary Data Sources

Marine Corps Personnel Casualty Reports (PCRs)

Provide event details not available from Clinical Records

Digital Radiography Images

Identified in I & II MEF FRAGO that all films go to NHRC

Over 2000 films received from OIF-2

Radiologist interpreting images for incorporation into CTR



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Current Initiatives

Head/Neck/Face Injury Study

Extremity Injury Study

Injury Scoring

Injury Severity Score (ISS)

Abbreviated Injury Scale (AIS-2005)

ICD-9.

Scaling Systems for Organ Specific Injuries

To be Used in Addition to Injury Severity Scoring Systems.

Will Provide Clinical Frames of Reference for Comparing Injury Levels.

Selected Scaling Systems for Navy-Marine Corps CTR

Liver Injury Scale.

Eye Injury Scale.

Mangled Extremity Severity Score.

Colon Injury Scale.

Kidney Injury Scale.



Navy-Marine Corps COMBAT TRAUMA REGISTRY
Naval Health Research Center San Diego, CA

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Navy-Marine Corps CTR Clinical Advisory Board

Dr. John Perciballi	Chief Clinical Advisor
Dr. HR Bohman	ABD/Colon/Rectal Clinical Advisor
Dr. Peter Rhee	General Trauma Surgery Clinical Advisor
Dr. John Labanc	Oral, Maxillofacial Clinical Advisor
Dr. Marlene DiMaio	Orthopedics Clinical Advisor
Dr. Mike Mazurek	Orthopedic Surgery Clinical Advisor
Pending	Anesthesia Clinical Advisor
Pending	Emergency Medicine Clinical Advisor
Pending	Neuro Surgery Clinical Advisor
Pending	Ear, Nose, Throat Clinical Advisor
Pending	Psychology Clinical Advisor
Pending	Ob/Gyn Clinical Advisor



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